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 Applicants' Docket No. 133976-1
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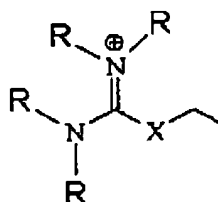
SEP 23 2006

Claims Listing

1-15 (Cancelled)

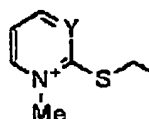
16. (New) A compound comprising a targeting moiety bound to a leaving group that differentiates the compound from an imaging agent derived from said compound so the imaging agent can be separated from said compound after substitution of the leaving group with the detectable species to yield the imaging agent, wherein the leaving group is selected from the group consisting of:

(i) groups of the formula:



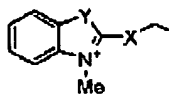
where X is S, O and R can be the same or different at each occurrence and is selected from C₁ to C₂₀ alkyl groups;

(ii) groups of the formula:



where Y is N or CH;

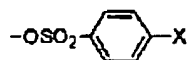
(iii) groups of the formula:



where when X is S, then Y is O or S and where when X is O, then Y is S;

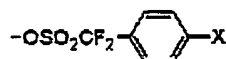
(iv) groups of the formula:

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where X is selected from C₄ to C₁₀ alkylene, -CN, -N⁺(CH₃)₃, or -(Q)_nOCH₃ where Q is C₂ to C₆ alkoxy and n = 1 to 6;

(v) groups of the formula:



where X is selected from C₄ to C₁₀ alkylene, -CN, -N⁺(CH₃)₃, or -(Q)_nOCH₃ where Q is C₂ to C₆ alkoxy and n = 1 to 6; and

(vi) groups of the formula:



where X is selected from C₄ to C₁₀ alkylene, -CN, -N⁺(CH₃)₃, or -(Q)_nOCH₃ where Q is C₂ to C₆ alkoxy and n = 1 to 6; and

wherein the targeting moiety is selected from the group consisting of proteins, glycoproteins, lectins, peptides, polypeptides, saccharides, vitamins, steroids, steroid analogs, hormones, cofactors, nucleosides, nucleotides, and polynucleotides.

17. (New) A compound as in claim 16 wherein the leaving group is bound to a solid support.

18. (New) A method of producing an imaging agent comprising the steps of:
 providing a compound that includes a targeting moiety bound to a leaving group that differentiates the compound from the imaging agent derived from the compound so the imaging agent can be separated from the compound after substitution of the leaving group with the detectable species to yield the imaging agent contains a site for regioselective substitution of a detectable species;
 contacting the compound with a solution containing the detectable species to form a reaction mixture; and
 recovering the imaging agent.

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19. (New) A method as in claim 18 wherein the step of providing a compound comprises providing a compound wherein the leaving group is bound to a solid support.

20. (New) A method as in claim 18 wherein the step of contacting the compound with a solution containing the detectable species comprises contacting the compound with a solution containing ^{18}F .